Manafa Tech | Assignment

Tasks:

- Using Terraform, and Oracle Cloud Infrastructure (OCI), build a hop-and-spoke network and all of its necessary components
- Provision an application VM with Nuxt.js as a frontend and Laravel as a backend
- Provision a database VM with MySQL, Redis and Mongo
- Setup an automated CI/CD deployment using Jenkins
- Use Ansible to install and configure all systems

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Hub and Spoke Network

I used a Terraform to deploy the hub and spoke infrastructure. The components configured through Terraform are given below:

- Three VCNs
- Internet Gateway for Hub VCN
- Local Peering Gateways
- Subnets
- Route Tables

The Terraform code is here:
https://github.com/magoldev/manafa-assignment/tree/main/hub-and-spoke

Note: Some components (WAF, Firewall etc) of the below diagram are not part of the Terraform code to meet the submission deadline.

Here is the draw.io link
https://drive.google.com/file/d/1vsEYfnQj3FU3HMfqEFwTIZG9d7n8OVfv/view?usp=sharing
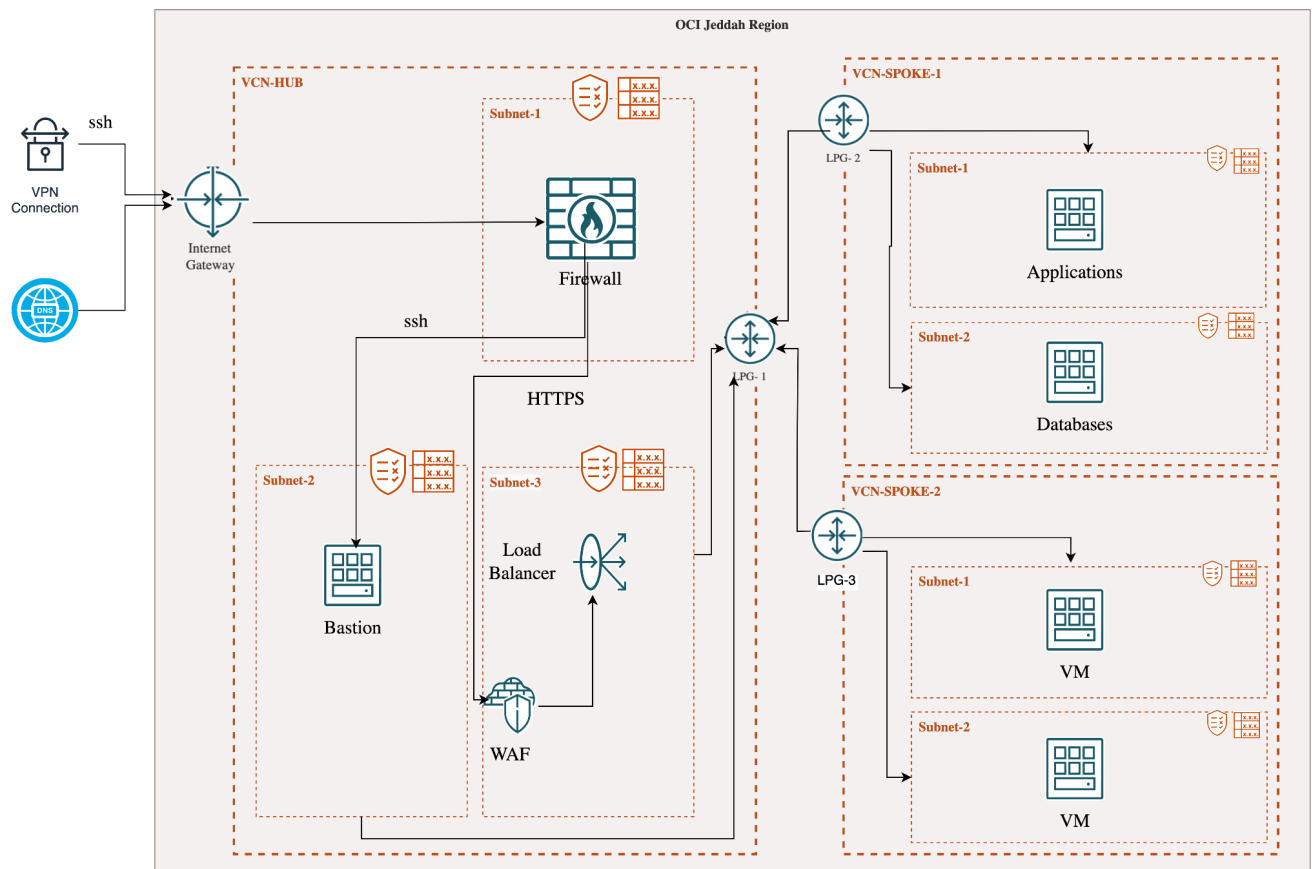
Provisioning of VMs

VMs are also provisioned by Terraform

- Separated VMs for Application and Database in spoke1 VCN.

Installation of prerequisites with Ansible

Using Ansible to configure application prerequisites.

Here is the link to Ansible playbooks and roles.

https://github.com/magoldev/manafa-assignment/tree/main/Ansible

Deployment of Application

Databases
- MYSQL using Ansible
- MONGO using Ansible
- Redis using Ansible

For Nuxt JS (Frontend)
- Ubuntu OS
- Install Node and PM2
- Clone code frontend branch (https://github.com/magoldev/laravel-nuxt-app)
- Install node dependencies (npm install)
- Build code (npm run build)
- Run with PM2

For Laravel (Backend)
- Install PHP FPM with Ansible
- Install Laravel Composer
- Clone code backend branch (https://github.com/magoldev/laravel-nuxt-app)
- Set .env
- Install dependencies with the composer
- php artisan key:generate
- php artisan migrate
- Set permissions

Setup Nginx
- Use nginx as webserver
- Configure separate virtual hosts for Frontend and Backend
- Configurations of virtual hosts are available here
    - https://github.com/magoldev/manafa-assignment/tree/main/nginx-configurations
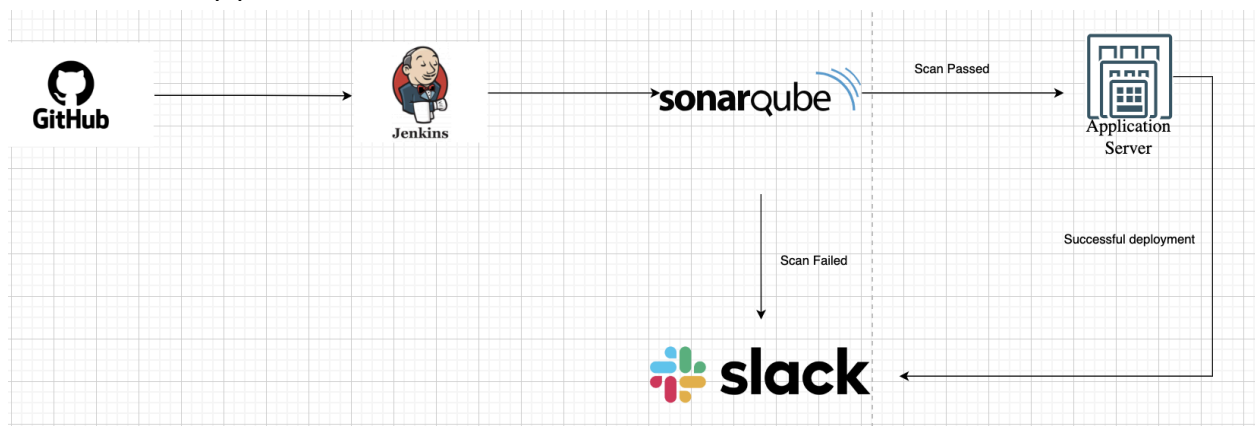
Application Flow
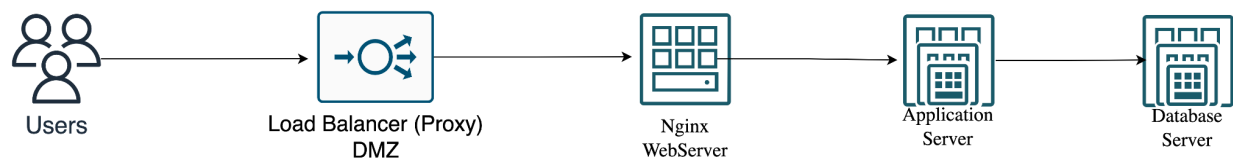
CI/CD with Jenkins

Flow of Jenkins pipeline.

Configured separate declarative Jenkins pipelines for Frontend and Backend.

Assumptions:
- Forked a sample code from GitHub https://github.com/magoldev/laravel-nuxt-app
- Branch *frontend* for Frontend
- Branch *backend* for Backend

Jenkins Pipeline Code is here
https://github.com/magoldev/manafa-assignment/tree/main/Jenkins